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Nicholas A. Kotov

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EXAMINER

LEE, EDMUND H

ART UNIT

PAPER NUMBER

1732

DATE MAILED: 07/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/818,001

Applicant(s)

KOTOV, NICHOLAS A.

Examiner

EDMUND H LEE

Art Unit

1732

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) 8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4,5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

### DETAILED ACTION

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-7, drawn to a method for the assembly of a thin film, classified in class 264, subclass 255.

II. Claim 8, drawn to a thin film, classified in class 427, subclass 2.1.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the product as claimed can be made by another and materially different process such as chemical vapor deposition onto a peelable substrate.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Alan Weeks on 7/22/03 a provisional election was made with oral traverse to prosecute the invention of group I, claims 1-7. Affirmation of this election must be made by applicant in replying to this Office action. Claim 8 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

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5. Claims 3 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase "for at least on repetition" (cl 3, ln 1; cl 5, ln 1) is indefinite because it is idiomatically incorrect.

The phrase "step (c)(iii)" (cl 6, ln 1) is indefinite because there is no step (c)(iii) in any of the preceding the claims.

The phrase "step (c)(i) or (c)(iii)" (cl 7, lns 1-2) is indefinite because there are no steps (c)(i) and (c)(iii).

Clarification and/or correction is requested.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al (USPN 6391220) in view of the admitted prior art set forth on pg 2, ln 1-pg 3, ln 7. In regard to claim 1, Zhang et al teach the basic claimed process including a method for the assembly of a thin film (col 4,ln 57-col 5, ln 6; figs 1-5); applying a release layer/substrate to a support surface/substrate (col 2, lns 40-45; col 4,ln 57-col 5, ln 6; figs 1-5)—as a note, it should be mentioned that the release layer and substrate of

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Zhang et al constitute the claimed substrate and support surface, respectively; forming a thin film upon the release layer by any suitable process such as electroplating (col 4,ln 57-col 5, ln 6; figs 1-5); removing the release layer together with the thin film from the substrate (col 4,ln 57-col 5, ln 6; figs 1-5); and separating the release layer from the thin film (col 4,ln 57-col 5, ln 6; figs 1-5). However, Zhang et al does not teach the claimed substeps for forming the thin film. The admitted prior art teaches it is well-known in the thin film technology to form thin films by the layer-by-layer (LBL) assembly method. The admitted prior art teaches that LBL comprising depositing a film on a substrate by repeating the process of: 1) immersion of the substrate in an aqueous solution of polyelectrolyte; 2) washing with neat solvent; 3) immersion in an aqueous solution of nanoparticles; and 4) final washing with neat solvent. This process can be repeated as many times as necessary depending on the number of layers required. Further, Zhang et al teaches that LBL is an attractive alternative to other thin film deposition techniques because it is simple and universal. Zhang et al and the admitted prior art are combinable because they are analogous with respect to forming a thin film assembly. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the LBL method of the admitted prior art as the deposition process of Zhang et al in order to reduce process complexity. In regard to claim 2, the above combination of Zhang et al and the admitted prior art teach the limitations of claim 2. In regard to claim 3, such is mere obvious matter of choice dependent on the desired final product and of little patentable consequence to the claimed process since it is not a manipulative feature or step of the claimed process. Further, it is well-known in

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the thin film art to build up layers of different material. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a third substance having an affinity similar to the first substance in the process of Zhang et al (modified) in order to produce diverse thin films. In regard to claim 4, such is mere obvious matter of choice dependent on the desired final product and of little patentable consequence to the claimed process since it is not a manipulative feature or step of the claimed process. Further, it is well-known in the thin film art to use a biological compound as a component of a layer. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a biological compound as one of the substances used in the process of Zhang et al (modified) in order to produce diverse thin films. In regard to claim 5, such is mere obvious matter of choice dependent on the desired final product and of little patentable consequence to the claimed process since it is not a manipulative feature or step of the claimed process. Further, it is well-known in the thin film art to build up layers of different material. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a third substance having an affinity similar to the second substance in the process of Zhang et al (modified) in order to produce diverse thin films. In regard to claim 6, such is mere obvious matter of choice dependent on the desired final product and of little patentable consequence to the claimed process since it is not a manipulative feature or step of the claimed process. Further, it is well-known in the thin film art to use a biological compound as a component of a layer. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use

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a biological compound as one of the substances used in the process of Zhang et al (modified) in order to produce diverse thin films. In regard to claim 7, Zhang et al teaches building up layers of the thin film (col 4, ln 57-col 5, ln 6; figs 1-5)--as a note, each layer constitutes a layer of material that structurally stabilizes the thin film.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hunt et al (USPN 6372634) teaches a process of forming nanostructure coatings including peeling the thin film from a temporary substrate. The following patents teach the state of the art of thin films: Ferguson et al (USPN 6022590); Claus et al (USPN 6447887); Onda et al (USPN 6020175); and Liu et al (USPN 6114099).

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to EDMUND H LEE whose telephone number is 703.305.4019. The examiner can normally be reached on MONDAY-THURSDAY FROM 9AM-4PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, RICHARD CRISPINO can be reached on 703.308.3853. The fax phone numbers for the organization where this application or proceeding is assigned are 703.305.7718 for regular communications and 703.305.3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.308.0661.

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EDMUND H LEE  
Primary Examiner  
Art Unit 1732

7/24/03

EHL

July 24, 2003